

LAYERED ALIGNED POLYMER STRUCTURES AND
METHODS OF MAKING SAME

ABSTRACT OF THE DISCLOSURE

This invention includes a method of producing a nanostructured artificial template comprising more than one thin, oriented layer of polymer material. The material is preferably produced by the method of introducing a shearing flow to a free surface in a predominantly monomeric solution of the self-assembling polymer sub-units, and inducing polymerization or growth of the monomer while in this shearing flow. The system for forming the oriented layer of material provides relative movement between a delivery system and the substrate on or over which the material is deposited. The rate of flow of the material from the delivery system and the relative velocity between the deposition surface and the material as it is delivered to the surface are controlled to properly orient the material at the desired thickness. These rates can be adjusted to vary the properties of the film in a controlled manner. Preferred embodiments include either angular or linear relative movement between the delivery system and the substrate. The nanostructured artificial template is useful for inducing the production of a templated extracellular matrix by a population of cells.